

IN THE CLAIMS:

Please substitute the following claims for the same numbered claims in the application:

1-31. (Cancelled).

32. (New): A metallurgical structure comprising:

a passivation layer;

a via through said passivation layer extending to a metal line within said metallurgical structure;

a first barrier layer lining said via;

a first metal plug in said via above said first barrier layer;

a second barrier layer adjacent said first metal plug;

a second metal plug adjacent said second barrier layer, wherein said second metal plug, said first barrier layer, and said second barrier layer form a planar exterior surface of said integrated circuit structure;

a solder bump formed on said planar exterior surface, wherein said solder bump is in direct contact with said second metal plug, said first barrier layer, and said second barrier layer; and

wherein said second metal plug is operable for preventing tin diffusion from said solder bump to said metal line.

33. (New) The metallurgical structure of claim 32, wherein said first metal plug, said second

metal plug, and said metal line comprise a same material, wherein said same material comprises copper.

34. (New) The metallurgical structure of claim 32, wherein said first barrier layer and said second barrier layer comprise one or more layers of Ti, TiN, Ta, and TaN.

35. (New) The integrated circuit structure of claim 32, wherein said solder bump is comprised of a lead/tin alloy.

36. (New) The integrated circuit structure of claim 32, wherein said second metal plug forms an intermetallic formation with elements diffusing from said solder bump so as to prevent said elements from penetrating through said first barrier layer and said second barrier layer into said metal line.

37. (New) The integrated circuit structure of claim 32, wherein each of said second metal plug, said first barrier layer, and said second barrier layer is operable for preventing impurities to reach said metal line.

38. (New) An integrated circuit structure comprising:
internal components within an exterior covering;
a via extending through said exterior covering to said internal components;
a first barrier layer lining said via;

a first plug in said via above said first barrier layer;

a second barrier layer above said first plug;

a second plug above said second barrier layer, wherein said second plug, said first barrier layer, and said second barrier layer form a planar exterior surface or said integrated circuit structure; and

a connector formed on said planar exterior surface, wherein said connector is in direct contact with said second plug, said first barrier layer, and said second barrier layer,

wherein said first plug, and said second plug, and said internal components comprise a same material, and

wherein said second plug forms an intermetallic formation with elements diffusing from said solder bump so as to prevent said elements from penetrating through said first barrier layer and said second barrier layer into said internal components.

39. (New) The integrated circuit structure of claim 38, wherein said same material comprises copper.

40. (New) The integrated circuit structure of claim 38, wherein said first barrier layer and said second barrier layer comprise one or more layers of Ti, TiN, Ta, and TaN.

41. (New) The integrated circuit structure of claim 38, wherein said connector is comprised of a lead/tin alloy.

42. (New) The integrated circuit structure of claim 38, wherein said second plug is operable for preventing tin diffusion from said connector to said internal components.

43. (New) The integrated circuit structure of claim 38, wherein each of said second plug, said first barrier layer, and said second barrier layer is operable for preventing impurities to reach said internal components.

44. (New) A metallurgical structure, comprising:

a first layer of copper formed on a structure;

a first barrier layer formed on said first layer of copper;

a second layer of copper formed on said first barrier layer;

a second barrier layer formed on said second layer of copper;

a third layer of copper formed on said second barrier layer; and

a conductive structure formed on said third layer of copper, wherein said conductive structure comprises impurities, wherein at least some of said impurities diffusing from said conductive structure,

wherein said second layer of copper forms an intermetallic formation with said impurities diffusing from said conductive structure, and adheres to said conductive structure, so as to prevent said impurities from penetrating through said first barrier layer into said first layer of copper, and

wherein said conductive structure is in direct contact with said third layer of copper, said first barrier layer, and said second barrier layer.

45. (New) The metallurgical structure of claim 44, wherein said conductive structure comprises a solder ball.
46. (New) The metallurgical structure of claim 45, wherein said solder ball comprises a lead/tin alloy.
47. (New) The metallurgical structure of claim 44, wherein said first barrier layer said second barrier layer are selected from the group consisting of Ti, TiN, Ta, TaN, and combinations thereof
48. (New) The metallurgical structure of claim 44, wherein said third layer of copper has an upper surface that is substantially coplanar with surrounding insulative structures.
49. (New) The metallurgical structure of claim 44, further comprising planarizing said structure.
50. (New) The metallurgical structure of claim 44, wherein said third layer of copper is operable for preventing tin diffusion from said conductive structure to said first layer of copper.
51. (New) The metallurgical structure of claim 44, wherein each of said third layer of copper, said first barrier layer, and said second barrier layer is operable for preventing impurities to reach

said first layer of copper.

52. (New) The metallurgical structure of claim 44, wherein said impurities comprise tin.